REMARKS

By the present amendment, claims 1 and 13, the only claims under rejection over prior art have been cancelled without prejudice or disclaimer of the subject matter so that the prior art rejection has been obviated. Further claims 2, 4, 7, 8 and 14 have been amended to correct the minor informalities in the claims noted by the Examiner. Additionally, claim 11 has been amended to overcome the rejection based on 35 USC 112, 2nd paragraph. Therefore, applicants submit that claims 2 – 12 and 14 – 17, indicated by the Examiner as being allowable if rewritten or amended to overcome the objections of the office action, should now be in condition for allowance.

Also, by the present amendment, new claims 18 - 28 have been presented, wherein new claims 18 and 28 are clarified modifications of claims 1 and 13, as will be discussed below, dependent claims 19 – 25 are similar to previously allowed claims 6 – 12, and claims 26 and 27 recite further features of the present invention. No new matter has been added.

At the outset, applicants submit that the present invention is drawn to a novel and non-obvious living body photometric apparatus which can accurately specify an objective small active region in a brain wherein hemoglobin variation signals are measured. In order to achieve this object, the present invention is characterized by a light source 10, a light measurement portion 20 which measures intensity of passing light at a plurality of measurement points of a subject to determine a hemoglobin variation signal in a time course, a signal processing portion 30 including means for performing a principal component analysis for the measurement data and for extracting a representative signal which most reflects the living body reaction when a task is given; and an input/output portion 33.

New claims 18 and 28 recite features of the signal processing portion 30 not found in the prior art. Specifically, applicants assert that the signal processing portion of the present invention as claimed has the abilities:

(1) to create and obtain the stimulation task signals in a time course or representative signals in a time course such as 601 and 602 in Fig. 6 from all of hemoglobin variation signals for 24 channels as shown in Fig. 4 by subjecting the same to a principal component analysis,

(2) to pattern match the representative signals in a time course with a reference hemoglobin variation signal selected for the particular stimulation task to determine the most correlated representative signal, and

(3) to determine a measurement point or channel which reacts most to the given stimulation task from the weights of respective hemoglobin variation signals in a time course at respective measurement points in the determined representative signal having the highest correlation with the reference hemoglobin variation signal.

Maki et al ('909) does not disclose the above features of the present invention. In Maki et al, for example, Figs. 6 and 7 show contour map images prepared from time-variable changes in relative change amounts of concentration values of hemoglobin oxide at the respective measuring points under the applicaton of loads of left-finger motion and right-finger motion of a subject, respectively. A method for preparation of the topography images is such that a time integral (alternatively, time average) of relative change amount ΔCoxy(t) signal 20 during load applying time (hatched period in Fig. 5) is calculated by the computer 11 at respective measuring points 19a to 19j (Fig. 3) and the measuring points having the same time integral amounts are connected to form the contour map such as shown in Figs. 6 - 8.

The contour map images of Maki et al are distinctly different than the signals displayed by the signal processing portion of the present invention. Wherein only a broad active region can be determined by the contour map of Maki et al, the stimulation task signal of claim 18 and the representative signal of claim 28 are used to specify one measurement point among the plurality of measurement points which responds most to the stimulation task (such as a game of making word chains and writing of words having a same pronunciation for example) by making use of the signal which shows the highest correlation with the reference hemoglobin variation signal in a time course. This is not disclosed by the prior art. The Examiner states that Maki et al discloses in "Fig. 8 and the description thereof", means for identifying a measurement point or a region which responds most to the stimulation task by making use of the at least one stimulation task signal calculated by the signal processing portion. However, Fig. 8 of Maki et al and the relevant disclosure does not teach or disclose such a limitation. Rather, Maki et al teaches that the topographic image 22 is illustrative of a change in cerebral hemodynamic movement which changes in association with a biological function. Maki et al does not disclose or teach one measurement point among the plurality of measurement points in a time course which shows the highest correlation with the reference hemoglobin variation signal in a time course, as in claims 18 and 28.

Further, Maki et al does not disclose or teach the claimed optical measurement portions measuring light beams to determine a hemoglobin variation signal in a time course, as recited in claims 18 and 28 and is described on pp. 13, lines 1–10 and pp. 19, lines 1-5 of the originally filed specification. For at least these reasons, the present invention distinguishes over the prior art in that it can specify

accurately and easily a reactive portion inside the living body when a task load is given to the living body.

In view of the above amendments and remarks, applicants submit that all claims present in this application should now be in condition for allowance and issuance of an action of favorable nature is courteously solicited.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 983.44776X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

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